

<http://www.darvill.clara.net/altenerg/>

## 1. Introduction

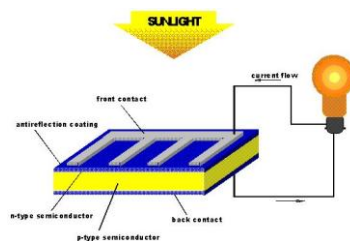
How long have we used solar power? \_\_\_ We've used the Sun for drying clothes and food for thousands of years, but only recently have we been able to use it for generating power. \_\_\_\_\_

Is it powerful? \_\_\_ It is amazingly powerful. Just the tiny fraction of the Sun's energy that hits the Earth (around a hundredth of a millionth of a percent) is enough to meet all our power needs many times over.

## 1. How it works

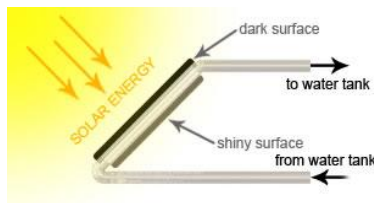
There are different ways that we can use the Sun's energy, describe each of them:

### Solar Cells



Solar cells convert light directly into electricity.

### Solar water heating



**Solar water heating**, where heat from the Sun is used to heat water in glass panels on your roof.

This means you don't need to use so much gas or electricity to heat your water at home.

### Solar Furnaces



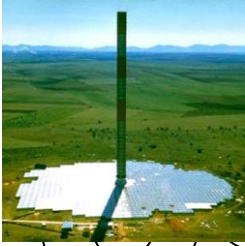
**Solar Furnaces** use a huge array of mirrors to concentrate the Sun's energy into a small space and produce very high temperatures.

There's one at Odeillo, in France, used for scientific experiments. It can achieve temperatures up to 3,000 degrees Celsius.

### Solar One power station



In California, the **Solar One** power station uses the Sun's heat to make steam, and drive a generator to make electricity.

**Solar towers.**

**solar towers.** The idea is very simple - you build a big greenhouse, which is warmed by the Sun. In the middle of the greenhouse you put a very tall tower.

The hot air from the greenhouse will rise up this tower, fast - and can drive turbines along the way.

This could generate significant amounts of power, especially in countries where there is a lot of sunshine and a lot of room, such as Australia.

**Photoluminescent products**

For example, **photoluminescent** products store light energy and release it later. They're also called "self-luminous" and are a useful source of [emergency lighting](#) in the event of a sudden power outage.

**2. Advantages and disadvantages**

Advantages:	Disadvantages:
<ul style="list-style-type: none"> <li>• Solar energy is free - it needs no fuel and produces no waste or pollution.</li> <li>• In sunny countries, solar power can be used where there is no easy way to get electricity to a remote place.</li> <li>• Handy for low-power uses such as solar powered garden lights and battery chargers, or for helping your home energy bills.</li> </ul>	<ul style="list-style-type: none"> <li>• Doesn't work at night.</li> <li>• Very expensive to build solar power stations, although the cost is coming down as technology improves. In the meantime, solar cells cost a great deal compared to the amount of electricity they'll produce in their lifetime.</li> <li>• Can be unreliable unless you're in a very sunny climate. In the United Kingdom, solar power isn't much use for high-power applications, as you need a large area of solar panels to get a decent amount of power. However, technology has now reached the point where it can make a big difference to your home fuel bills..</li> </ul>

**2. Summary**

- Solar Power is renewable
- 3 main ways to use it:-
  - Sun heats water in panels on your roof
  - Solar cells ("photovoltaic cells") make electricity from sunlight
  - Solar furnace
- Solar cells are expensive
- Solar power isn't much use unless you live somewhere sunny
- Doesn't cause pollution, doesn't need fuel

**Quiz:**

Is nuclear power renewable? (yes/no) no

Nuclear power stations use uranium as fuel. They need very little fuel compared to a fossil-fuel power station, because there is much more energy in nuclear fuel.

The chain reaction inside the reactor vessel creates heat, which turns water into steam to drive turbines, which drive generators to make electricity.

The fuel rods are safe to handle before they go into the reactor, it's only when they come out that you need robot arms and heavy shielding.

Nuclear power stations do not create atmospheric pollution because they do not burn anything. However, the small amount of waste they do produce is very dangerous.